

Introduction to Non-Terrestrial Networks

4 Hours

DURATION

1

MODULES

9

TOPICS

COURSE OVERVIEW

This course provides a comprehensive introduction to 5G Non Terrestrial Networks (NTN) as defined by 3GPP Releases 17 -19. We'll explore how NTN extends 5G connectivity beyond traditional terrestrial infrastructure using satellite and high altitude platforms, enabling broadband and IoT services. The course walks through key NR-NTN architectures, including transparent and regenerative payloads, supported frequency bands, and unique PHY/MAC adaptations required to address long latency, Doppler effects, and power-limited links. You will also gain insight into critical NTN signaling such as SIB19, ephemeris and epoch time, advanced timing mechanisms, and mobility procedures including location- and time-based handovers and RACH-less mobility. Finally, the course reviews real-world deployment considerations and the evolving 3GPP roadmap shaping the future of satellite-enabled 5G.

WHO THIS COURSE IS FOR

- This course is geared toward the following:
- Network Engineers
- RF Engineers
- System Engineers
- Anyone preparing to work on NTN deployments

PREREQUISITES

- This course is part of our corporate program and requires an NDA for access. Because of this, we can only offer this course to individuals through their companies.
- Mandatory: 5G NR Technical Overview
- Recommended: 5G SA Call Processing, 5G Air Interface

LEARNING OBJECTIVES

What You Will Learn

- Explore the fundamentals and evolution of 5G NTN
- Understand core NTN architectures and technologies

- Gain practical insight into key NTN PHY/MAC adaptations
- Learn how mobility is managed in NTN systems
- Evaluate deployment trade-offs and real-world considerations

COURSE SYLLABUS

1 Module, 9 Topics

01

TOPICS

- Introduction to NTN in 3GPP
- Introduction to satellites constellations
- NTN basic architecture, coverage options, QoS requirements, and challenges
- PHY/MAC and higher layer considerations, including NTN-specific SIBs and IEs
- Timing synchronization in NR-NTN
- Uplink scheduling and DMRS bundling
- NTN mobility procedures, challenges, and strategies
- NTN deployment considerations
- R18, R19, and R20 enhancements

WHAT IS INCLUDED

Everything You Need to Succeed

- Koenig course material for every module
- Delivery by certified instructors and subject matter experts
- Hands-on exercises throughout the course
- Course completion certificate from Koenig

ABOUT KOENIG

Who We Are

Established in 1993, Koenig Solutions is a globally recognised training provider with 35+ technology partnerships, 5,000+ training programmes and a network of certified instructors and subject matter experts, supporting individuals and enterprise teams worldwide.

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